openSAP

TOUCH IOT
WITH SAP LEONARDO
PROTOTYPE CHALLENGE

REFEREE PERFORMANCE ANALYZER
Story

All professional and international rugby teams now equip their players with small GPS devices located in a pocket of the jersey between the shoulder blades. These devices measure location on the field, but it also measures speed, impact, etc. which can be used by the coaching staff to compare players to each other, the analysis of positional play for strategy development, player work rate and size and frequency of impacts for player welfare tracking.

These same devices can be fitted to the jerseys of referees for use by a refereeing panel to evaluate the performance of a referee. This would consist of movement studies for fitness and conditioning, but it can also be used in conjunction with the players’ GPS data to evaluate the position of the referee relative to the players to help coach the referee on the best place to be for the best decision making.
Wayne
Referee Assessor

“I’d like to ensure consistent officiating standards across all top level rugby competitions through the systematic analysis of refereeing data.”

About
• 55 years old, retired international referee and rugby player
• Based at World Rugby headquarters in the UK
• Works with the international referee panel and selectors on referee performance
• Works “behind the scenes” on private evaluations which are not made available to the public

Responsibilities
• Responsible for evaluation of professional and international referees
• Responsible for referee development and training
• Evaluates referee performances after matches and provide feedback
• Consults with referee panel and coaches to define officiating standards.

Needs
• I need to know whether referees can sustain their performance throughout a match...
• I want to compare the performance of one referee to another...
• I’d like to understand the positioning of the referee relative to the players when infringements are identified and penalized

Main Goals
• Ensure consistent performance amongst top level referees
• Ensure consistent law interpretations and decision making by referees
• Provide a standards based evaluation criteria and comparison for new referees
• ...

Pain Points
• Very hard to systematically record referee positioning on field using match film only...
• No tools to compare one referee to another...
• Cannot get accurate information on referee position on field compared to that of the players using match video...
• ...

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Point of View

As a Referee Assessor

I need a way to analyze GPS data collected from Referees during matches and use that data to compare the performance of referees in terms of movement performance and efficiency, but also positioning during decision making.

so that I can provide feedback to referees to improve their performance such that refereeing standards are consistent across matches and competitions.
## User Experience Journey

<table>
<thead>
<tr>
<th>ACTIONS</th>
<th>MINDSET</th>
<th>FEELING</th>
<th>TOUCH POINTS</th>
</tr>
</thead>
</table>
| ➤ Open RefAnalyzer app  
➤ Login  
➤ Select match to evaluate  
➤ Confirm referee assignment | ➤ This was a very contentious match with a controversial call towards the end of the game – I wonder if he got tired?  
➤ Let’s see if there’s a trend line showing a tiring referee  
➤ Looking good at a high level  
➤ Let’s delve a little deeper  
➤ It doesn’t look like he was too tired | 😞 | ➤ RefAnalyzer App  
➤ Match Fixture List  
➤ Official Assignments  
➤ Timeline analysis module  
➤ Geospatial analysis module  
➤ Heatmap layer  
➤ Geospatial analysis module  
➤ Field Position Timeline layer  
➤ Player positions added | ➤ Print Menu Option |
| ➤ Open Timeline Analysis  
➤ Compare running speed between first and second half  
➤ Zoom in on last 15 minute timeline | ➤ It roughly correlates with the territory statistics for the two teams  
➤ Action areas mostly between the two 22 yard lines  
➤ Can’t really see anything here | 😞 | ➤ Geospatial analysis module  
➤ Field Position Timeline layer  
➤ Player positions added |
| ➤ Open Geospatial Analysis  
➤ Check heat map for referee average position on field  
➤ Compare to other typical matches | ➤ Interestingly he was mostly between the two 15 yard lines.  
➤ I wonder why he did not cover to the sidelines – Something to talk to him about  
➤ I can’t really see anything here around the time of the controversial call | 😞 | ➤ Geospatial analysis module  
➤ Field Position Timeline layer  
➤ Player positions added |
| ➤ Switch to position over time view  
➤ Check lines of running on field | ➤ Great! According to the GPS data, a player was offside, but outside of the camera field of view – that’s why people complained to much – they could not see it  
➤ The sideline official must have called that out | 😞 | ➤ Geospatial analysis module  
➤ Field Position Timeline layer  
➤ Player positions added |
| ➤ Add player positions to the view  
➤ Check his position relative to the players  
➤ Zoom in to time of call | ➤ This is good training information – I’ll save this one for next week’s referee training course | 😞 | ➤ Geospatial analysis module  
➤ Field Position Timeline layer  
➤ Player positions added |

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Prototype

Login Screen:

Landing Page where the user will select the match to analyze:
The basic match information will be shown as well as a picture of the official being evaluated.

From here the assessor can view the heart rate and speed over time, the position of the referee on the field over time and also overlay the players’ positions for further analysis.

Heart rate and speed of movement over time:

Referee position on field over time:
Player positions added and slider stopped at specific point in time to analyze player positions: